

To: **RB** Regional Managers/Regional Engineers
From: **RB** Robert Ball, Deputy Director of Design and Construction
CC: Ofelia Alcantara, Bruce Armistead, Eric Scotson, RDP Task Leads
Date: May 18, 2016
Subject: Notice to Designers No. 11 - Automatic Train Control (ATC) Site Requirements

Purpose:

This memorandum establishes the revised guidelines for the Regional Teams to follow in the Preliminary Engineering Design with respect to Automatic Train Control (ATC) sites.

Background:

These guidelines are the result of site requirements required for the Project's Automatic Train Control (ATC) System.

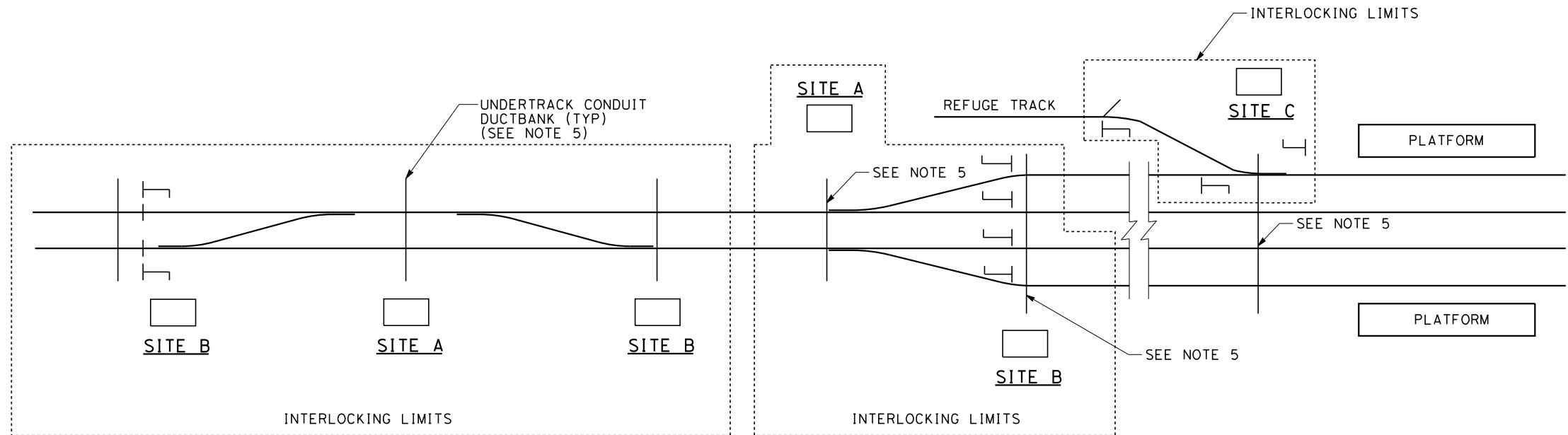
This Notice to Designer rectifies and supplements TM 3.3.2 ATC Site Requirements, Rev. 0.

Guidelines:

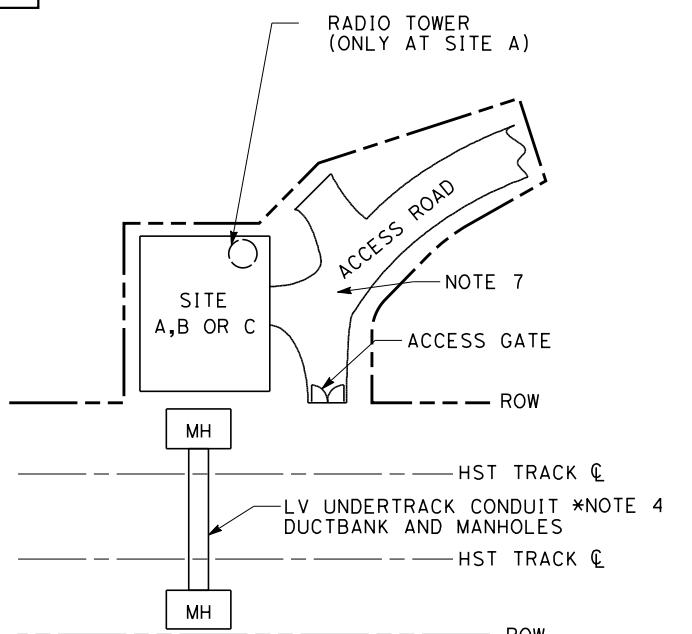
1. Supersede TM drawings (TM 3.3.2-A and TM 3.3.2-B) with the attached TM drawings:
 - TM 3.3.2-AA
 - TM 3.3.2-BB
 - TM 3.3.2-CC
 - TM 3.3.2-DD
2. Increase size of ATC sites:
 - Site A: from 45' x 25' to 70' x 35'
 - Site B: from 30 x 25' to 30' x 35'
 - Site C: from 35' x 25' to 35' x 35'
3. Modified/Added ATC sites:
 - Site AA: 90' x 35'
 - At the Wye junction, master interlocking house changes from Site A to Site AA.
 - Site D: 100' x 65'.
 - Per TM 3.3.2-CC, provide a nominal distance of 7.5 miles between:
 1. Two adjacent site D's
 2. Station Train Control and Communications (TCC) room and adjacent Site D
 3. Adjacent Site D and Site E (at a universal crossover)
 - Site E: 110' x 65'.
 - At universal crossovers, master interlocking house changes from Site A to Site E

NOTES:

1. SITES A AND B MAY BE LOCATED ON EITHER SIDE OF THE TRACK.
2. WHERE POSSIBLE, FOR SITES A AND B, ALTERNATIVES SHALL BE PROVIDED ON THE OPPOSITE SIDE OF THE TRACK.
3. SITE A WILL ACCOMMODATE TRAIN CONTROL SYSTEM EQUIPMENT, COMMUNICATIONS SYSTEM EQUIPMENT WITH THE RADIO TOWER, AND WAYSIDE POWER CONTROL (WPC) EQUIPMENT.
4. AN ACCESS ROAD AND AN ACCESS GATE SHALL BE PROVIDED FOR EACH SITE PER THE CIVIL DESIGN CRITERIA.
5. AN ASSEMBLY, CONSISTING OF A LOW VOLTAGE UNDERTRACK DUCTBANK WITH 2 LOW VOLTAGE MANHOLES, SHALL BE PROVIDED AT EACH TRAIN CONTROL SITE. REFER TO COMMUNICATIONS DRAWINGS FOR LOW VOLTAGE UNDERTRACK CONDUIT DUCTBANK AND MANHOLE DETAIL REQUIREMENTS.
6. FOR NUMBER OF CONDUITS REFER TO COMMUNICATIONS DESIGN CRITERIA AND DRAWING "TYPICAL CROSS SECTION SYSTEMS LOW-VOLTAGE CONDUIT DUCTBANK".
7. ACCESS ROADS AND ACCESS GATES ARE SHOWN FOR INFORMATION ONLY. REFER TO CIVIL DESIGN CRITERIA FOR ACCESS ROADS AND ACCESS GATES DETAIL REQUIREMENTS.



PLAN



SITE A, B OR C

WITH LOW-VOLTAGE UNDERTRACK CONDUIT DUCTBANK, ACCESS ROADS AND GATES

DESIGNED BY S. KATREDDI	
DRAWN BY V. LAVERDE	
CHECKED BY H. GLICKENSTEIN	
IN CHARGE E. SCOTSON	
DATE 05/13/2016	

**PARSONS
BRINCKERHOFF**



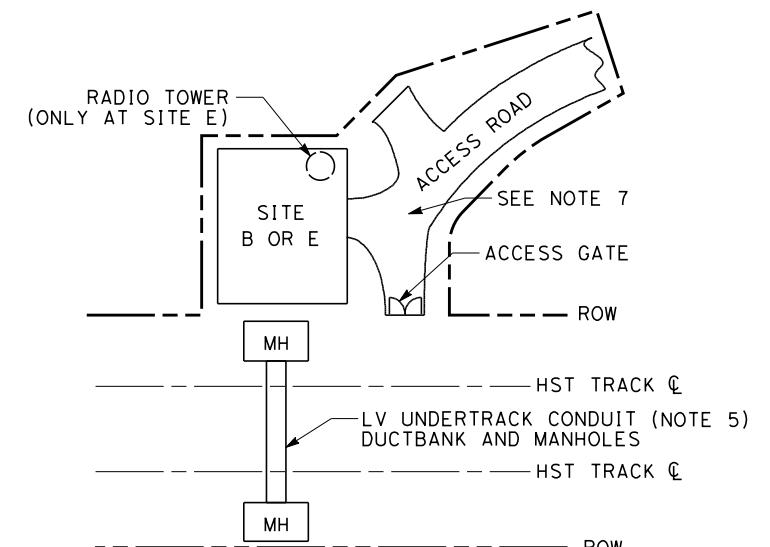
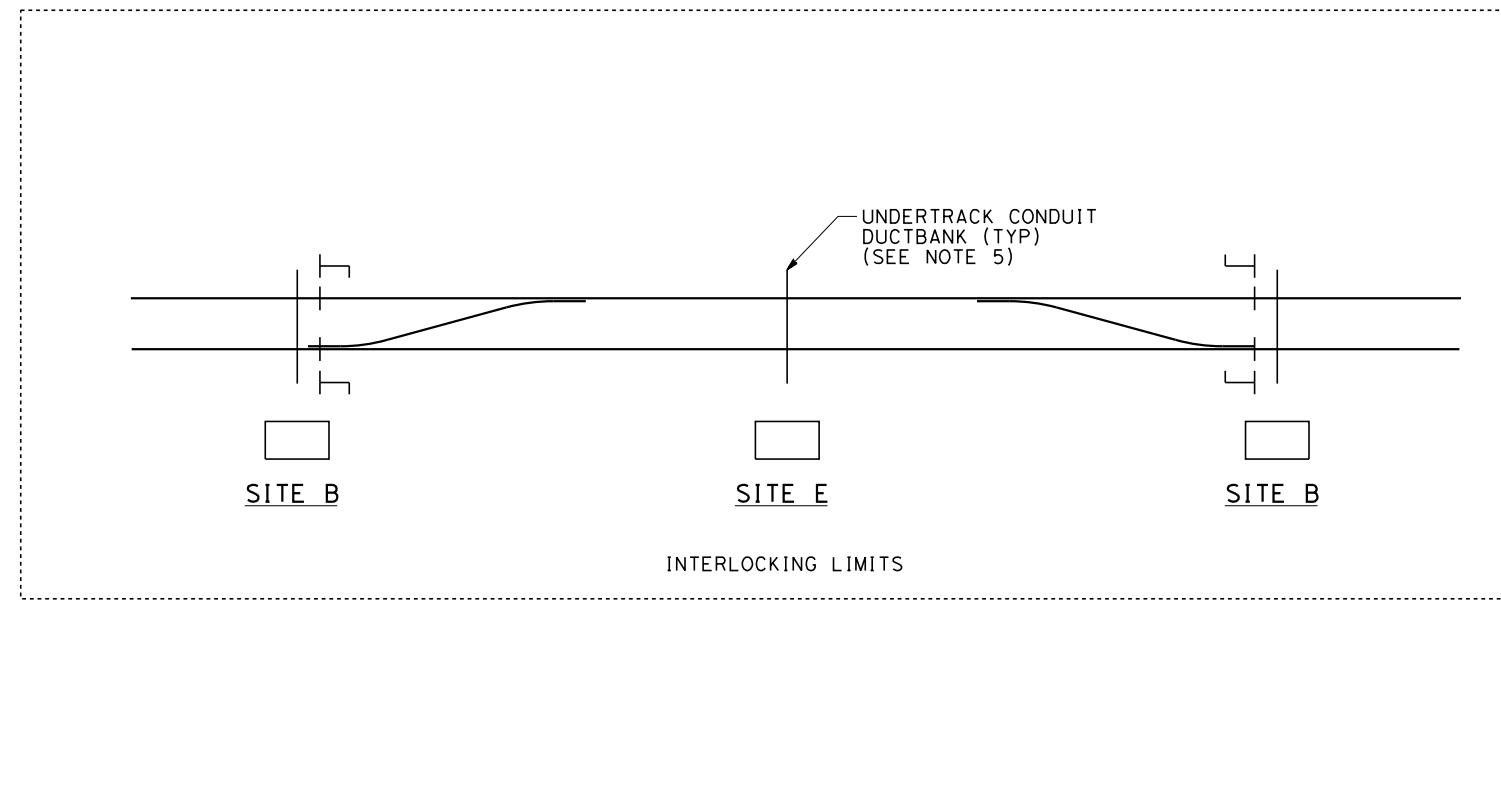
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
TECHNICAL MEMORANDUM**

TYPICAL TRAIN CONTROL SYSTEM
LAYOUT AT STATIONS

CONTRACT NO. 13259
DRAWING NO. TM-3.3.2-AA
SCALE NO SCALE
SHEET NO.

NOTES:

1. SITES B AND E MAY BE LOCATED ON EITHER SIDE OF THE TRACK.
2. WHERE POSSIBLE, FOR SITES B AND E, ALTERNATIVES SHALL BE PROVIDED ON THE OPPOSITE SIDE OF THE TRACK.
3. SITE E WILL ACCOMMODATE TRAIN CONTROL SYSTEM EQUIPMENT, COMMUNICATIONS SYSTEM EQUIPMENT WITH THE RADIO TOWER, AND WAYSIDE POWER CONTROL (WPC) EQUIPMENT.
4. AN ACCESS ROAD AND AN ACCESS GATE SHALL BE PROVIDED FOR EACH SITE PER THE CIVIL DESIGN CRITERIA.
5. AN ASSEMBLY, CONSISTING OF A LOW VOLTAGE UNDERTRACK DUCTBANK WITH 2 LOW VOLTAGE MANHOLES, SHALL BE PROVIDED AT EACH TRAIN CONTROL SITE. REFER TO COMMUNICATIONS DRAWINGS FOR LOW VOLTAGE UNDERTRACK CONDUIT DUCTBANK AND MANHOLE DETAIL REQUIREMENTS.
6. FOR NUMBER OF CONDUITS REFER TO COMMUNICATIONS DESIGN CRITERIA AND DRAWING "TYPICAL CROSS SECTION SYSTEMS LOW-VOLTAGE CONDUIT DUCTBANK".
7. ACCESS ROADS AND ACCESS GATES ARE SHOWN FOR INFORMATION ONLY. REFER TO CIVIL DESIGN CRITERIA FOR ACCESS ROADS AND ACCESS GATES DETAIL REQUIREMENTS.



SITE B OR E

WITH LOW-VOLTAGE UNDERTRACK CONDUIT DUCTBANK, ACCESS ROADS AND GATES

REV	DATE	BY	CHK	APP	DESCRIPTION	DESIGNED BY S. KATREDDI DRAWN BY V. LAVERDE CHECKED BY H. GLICKENSTEIN IN CHARGE E. SCOTSON DATE 05/13/2016

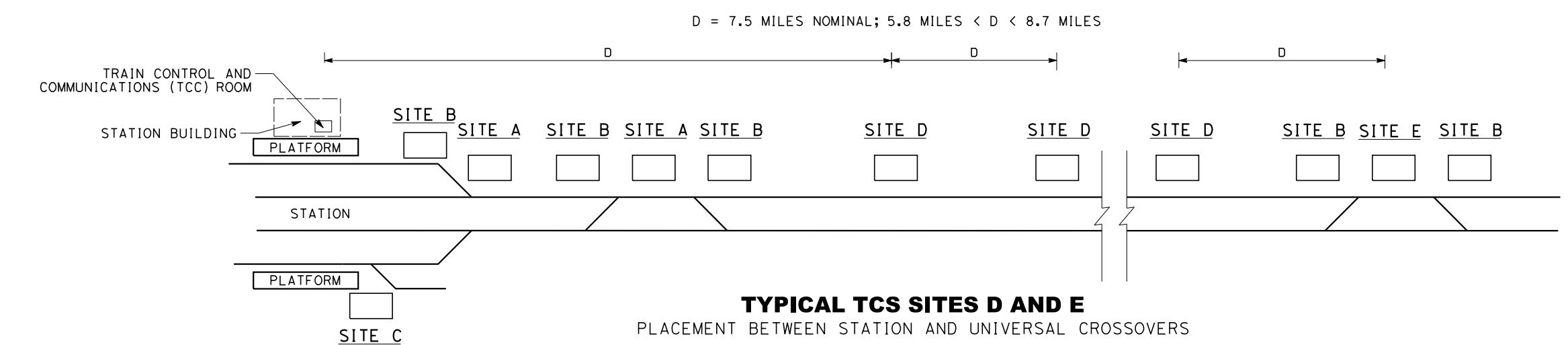
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**CALIFORNIA HIGH-SPEED TRAIN PROJECT
TECHNICAL MEMORANDUM**

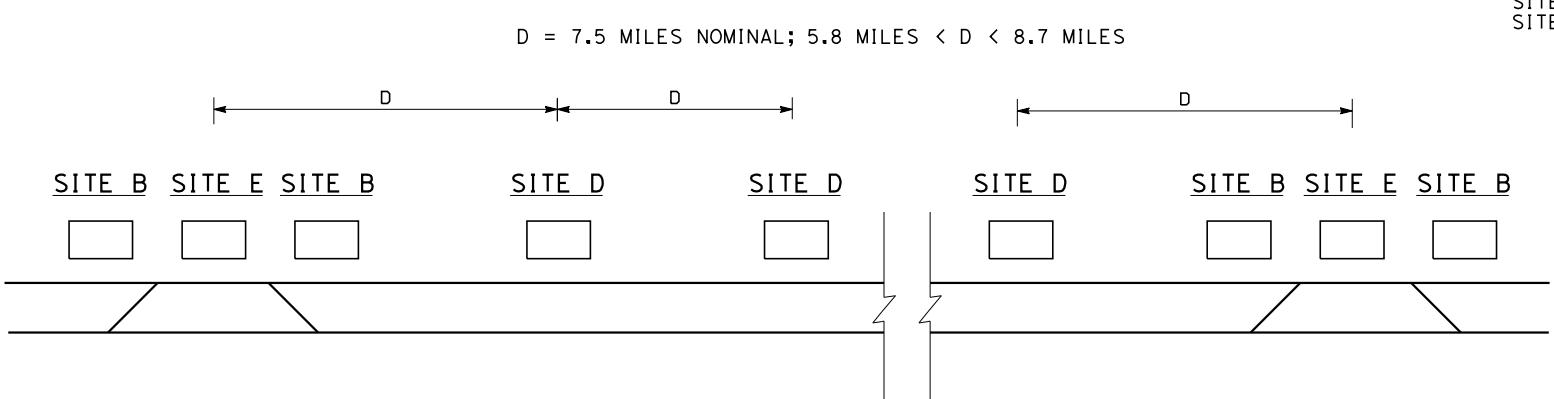
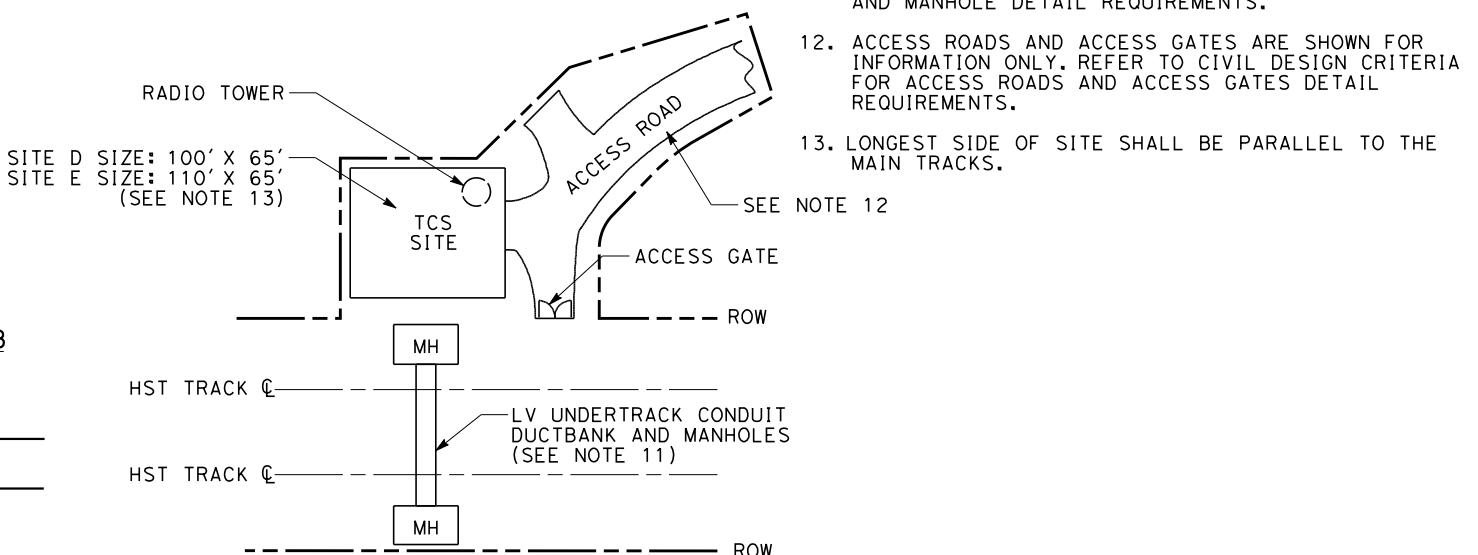
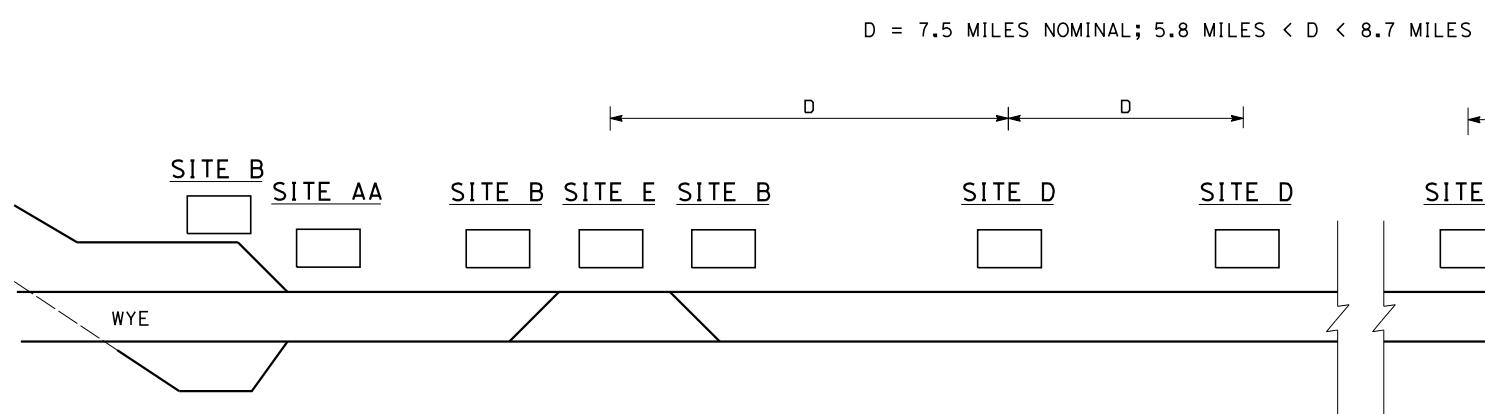
TRAIN CONTROL SYSTEM SITES LAYOUT
AT UNIVERSAL CROSSOVERS

CONTRACT NO.
DRAWING NO. TM-3.3.2-BB
SCALE NO SCALE
SHEET NO.



NOTES:

1. THIS DRAWING SHOWS A TYPICAL SPACING BETWEEN STATION TRAIN CONTROL AND COMMUNICATIONS (TCC) ROOM, D SITES, AND E SITES AT UNIVERSAL CROSSOVERS.
2. IF THE STATION DESIGN IS NOT AVAILABLE, THE CENTER LINE OF PLATFORM SHALL BE USED AS A REFERENCE POINT INSTEAD OF THE EXACT LOCATION OF THE TCC ROOM.
3. D SITES SHALL BE PROVIDED AT THE NOMINAL DISTANCE OF 7.5 MILES BETWEEN STATION TCC ROOM AND ADJACENT SITE D, BETWEEN 2 ADJACENT D SITES, AND BETWEEN ADJACENT D SITE AND E SITE AT UNIVERSAL CROSSOVERS.
4. MINIMUM SPACING BETWEEN STATION TCC ROOM AND ADJACENT SITE D, BETWEEN 2 ADJACENT D SITES, AND BETWEEN ADJACENT D SITE AND E SITE AT UNIVERSAL CROSSOVERS IS 5.8 MILES.
5. MAXIMUM SPACING BETWEEN STATION TCC ROOM AND ADJACENT SITE D, BETWEEN 2 ADJACENT D SITES, AND BETWEEN ADJACENT D SITE AND E SITE AT UNIVERSAL CROSSOVERS IS 8.7 MILES.
6. D SITES MAY BE LOCATED ON EITHER SIDE OF TRACK.
7. FOR EACH D SITE, AN ALTERNATIVE SHALL BE PROVIDED.
8. IF THERE IS AN EXISTING STAND ALONE RADIO SITE (SRS) WITHIN THE SPACING LIMITS FOR A D SITE, THE SRS CAN BE REPLACED WITH A NEW D SITE.
9. IF THERE IS A TRACTION POWER FACILITY (TPF) WITHIN THE SPACING LIMITS FOR AN ATC D SITE, THE ATC D SITE CAN BE PLACED CLOSE TO THE TPF SITE TO UTILIZE THE SAME ACCESS ROAD.
10. THIS CRITERIA IS NOT APPLICABLE FOR TUNNELS LONGER THAN 6 MILES AND THOSE WILL BE CONSIDERED AS A SPECIAL CASE.
11. AN ASSEMBLY, CONSISTING OF A LOW VOLTAGE UNDERTRACK DUCTBANK WITH 2 LOW VOLTAGE MANHOLES, SHALL BE PROVIDED AT EACH TRAIN CONTROL SITE. REFER TO COMMUNICATIONS DRAWINGS FOR LOW VOLTAGE UNDERTRACK CONDUIT DUCTBANK AND MANHOLE DETAIL REQUIREMENTS.
12. ACCESS ROADS AND ACCESS GATES ARE SHOWN FOR INFORMATION ONLY. REFER TO CIVIL DESIGN CRITERIA FOR ACCESS ROADS AND ACCESS GATES DETAIL REQUIREMENTS.
13. LONGEST SIDE OF SITE SHALL BE PARALLEL TO THE MAIN TRACKS.



TYPICAL SITES D & E CONFIGURATION
WITH LOW-VOLTAGE UNDERTRACK CONDUIT
DUCTBANK, ACCESS ROADS AND GATES

REV	DATE	BY	CHK	APP	DESCRIPTION
					05/13/2016

DESIGNED BY
S. KATREDDI
DRAWN BY
V. LAVERDE
CHECKED BY
H. GLICKENSTEIN
IN CHARGE
E. SCOTSON
DATE
05/13/2016

**PARSONS
BRINCKERHOFF**



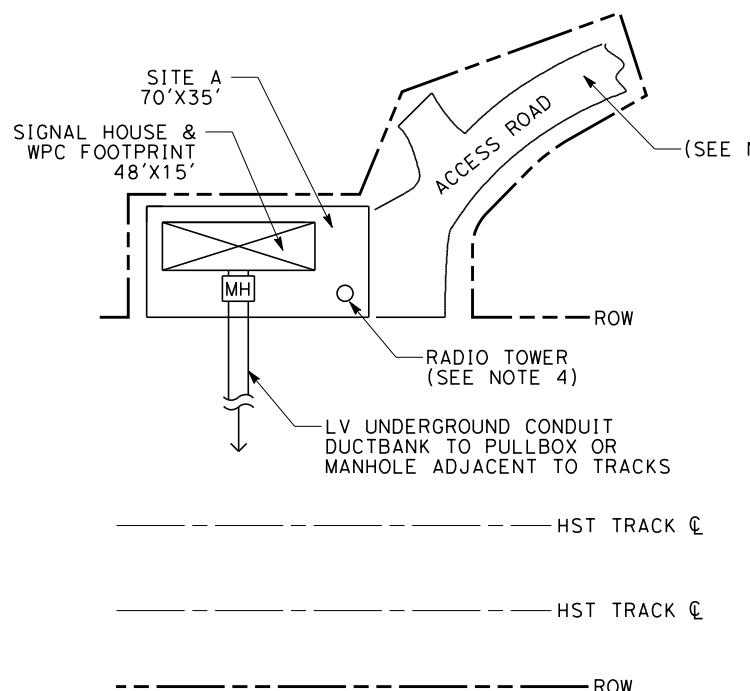
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
TECHNICAL MEMORANDUM**

TYPICAL TRAIN CONTROL SYSTEM
SITES D AND E PLACEMENT

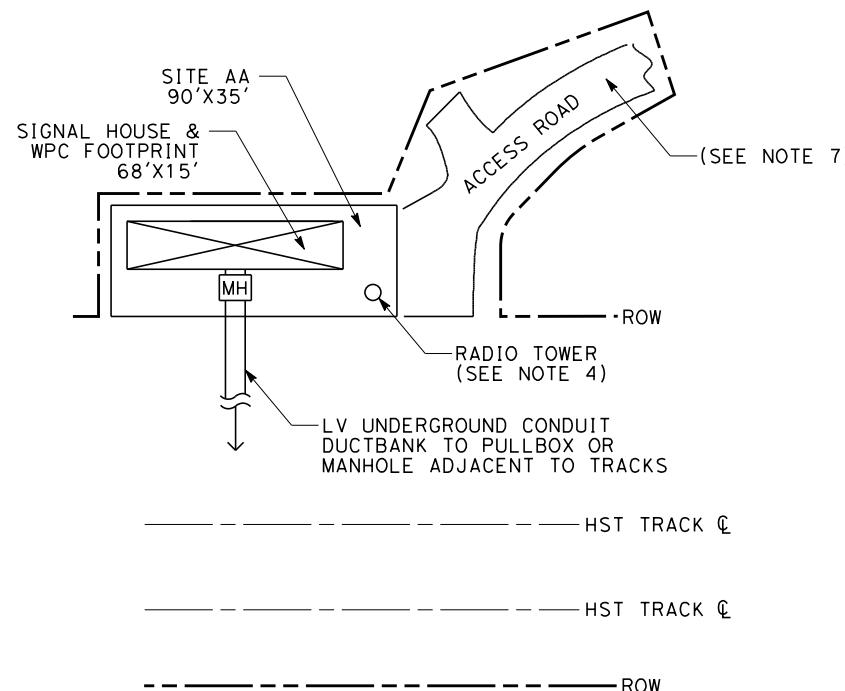
CONTRACT NO.	13259
DRAWING NO.	TM-3.3.2-CC
SCALE	NO SCALE
SHEET NO.	

NOTES:

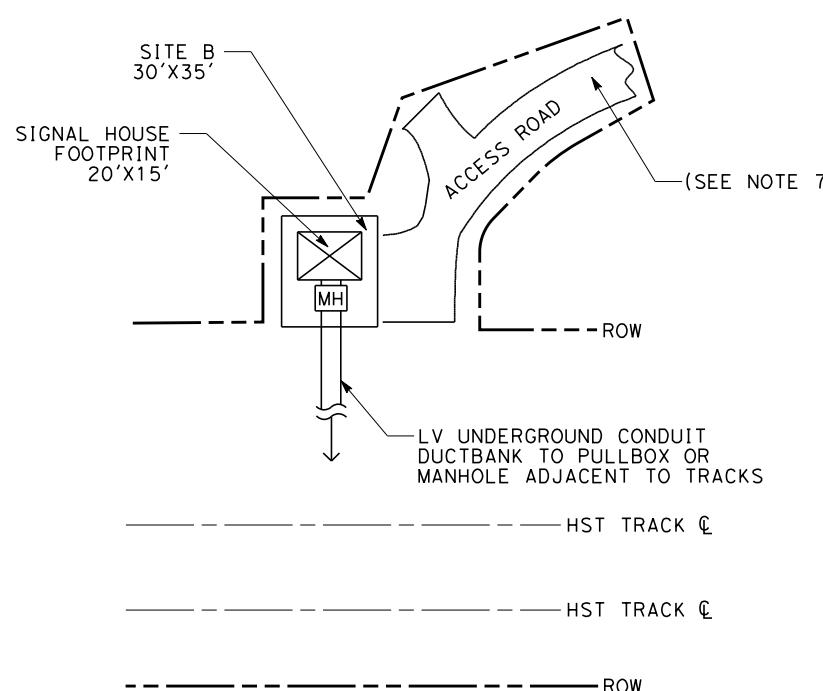
1. SITES A AND AA WILL ACCOMMODATE TRAIN CONTROL, COMMUNICATIONS SYSTEM (WITH RADIO TOWER), AND WAYSIDE POWER CONTROL (WPC) EQUIPMENT. A SEPARATE ROOM OF 25 SQUARE FEET SHALL BE RESERVED FOR WPC WITHIN THE SIGNAL HOUSE.
2. REFER TO COMMUNICATIONS DRAWINGS FOR DUCTBANK, MANHOLE CROSS SECTIONS, DETAILS AND ELEVATIONS.
3. FOR NUMBERS OF CONDUITS REFER TO COMMUNICATION DESIGN CRITERIA AND DRAWING "TYPICAL CROSS SECTION SYSTEMS LOW-VOLTAGE CONDUIT DUCTBANK".
4. FOR RADIO TOWER REQUIREMENTS AND CLEARANCES REFER TO COMMUNICATIONS DESIGN CRITERIA AND DRAWINGS.
5. FOR ACCESS RESTRICTION FENCING AND BERM DETAILS, REFER TO CIVIL DIRECTIVE DRAWINGS.
6. TRACK SYSTEMS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN. FOR SITE DRAINAGE REQUIREMENTS REFER TO DRAINAGE DIRECTIVE DRAWINGS.
7. FOR ACCESS ROADS, ACCESS GATE AND ACCESS TO TRACKWAY REQUIREMENTS REFER TO SAFETY AND SECURITY DESIGN REQUIREMENTS FOR INFRASTRUCTURE ELEMENTS AND CIVIL DESIGN CRITERIA.



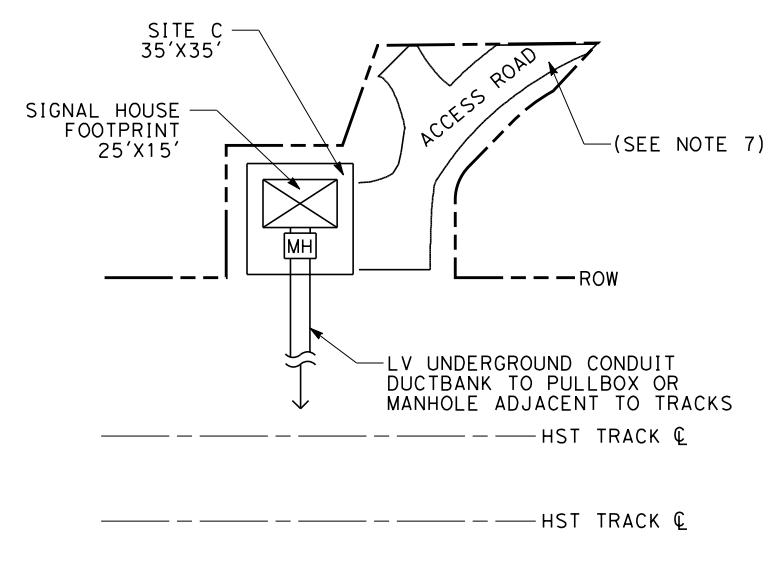
SITE A TYPICAL CONFIGURATION



SITE AA TYPICAL CONFIGURATION



SITE B TYPICAL CONFIGURATION



SITE C TYPICAL CONFIGURATION

REV	DATE	BY	CHK	APP	DESCRIPTION	DESIGNED BY S. KATREDDI	DRAWN BY V. LAVERDE	CHECKED BY H. GLICKENSTEIN	IN CHARGE E. SCOTSON	DATE 05/13/2016

**PARSONS
BRINCKERHOFF**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT
TRAIN CONTROL DIRECTIVE**

TYPICAL TCS SITES A, AA, B, & C LAYOUT

CONTRACT NO.
DRAWING NO.
TM-3.3.2-DD
SCALE
NO SCALE
SHEET NO.